Welcome

Restoration Advisory Board Meeting

Robins Air Force Base

14 March 2002

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Theme: Site Investigation and Closure

Welcome and Program Introduction

Mr. Steven Coyle

Installation Co-Chair

Test Firing Range RCRA CAP & Completion Report

Mr. Mike Breazeale, WR-ALC/EMQ and Mr. Mark MacEwan, Earth Tech

March 14, 2002

RCRA Facility Investigation

- Field work conducted: October 1998 - May 1999
  - Objective to assess horizontal and vertical extent of lead in soil, sediment, surface water, and groundwater
  - 255 soil samples
  - 16 sediment samples
  - 6 surface water samples
  - 9 groundwater samples

RCRA Facility Investigation Results

- Lead detected in only four soil samples above 400 ppm
- Lead not detected in sediment above 400 ppm
- Lead not found in surface water nor groundwater samples
- GaEPD requested a CAP be prepared and implemented for remediation of soil containing elevated concentrations of lead

RCRA Corrective Action Plan Criteria

- Excavation and off-site disposal of soil exceeding 930 ppm
- Abandonment of nine on-site monitoring wells since groundwater did not warrant corrective action
- This corrective action is the final remedy

RCRA Corrective Action Plan Results

- 45,000 pounds (22.5 tons) of soil excavated from the site and disposed at Houston County MSW Landfill
- Nine monitoring wells located at SWMU 63 decommissioned
- Analytical results indicated soils with elevated lead concentrations have been removed

CORRECTIVE ACTION

CORRECTIVE ACTION

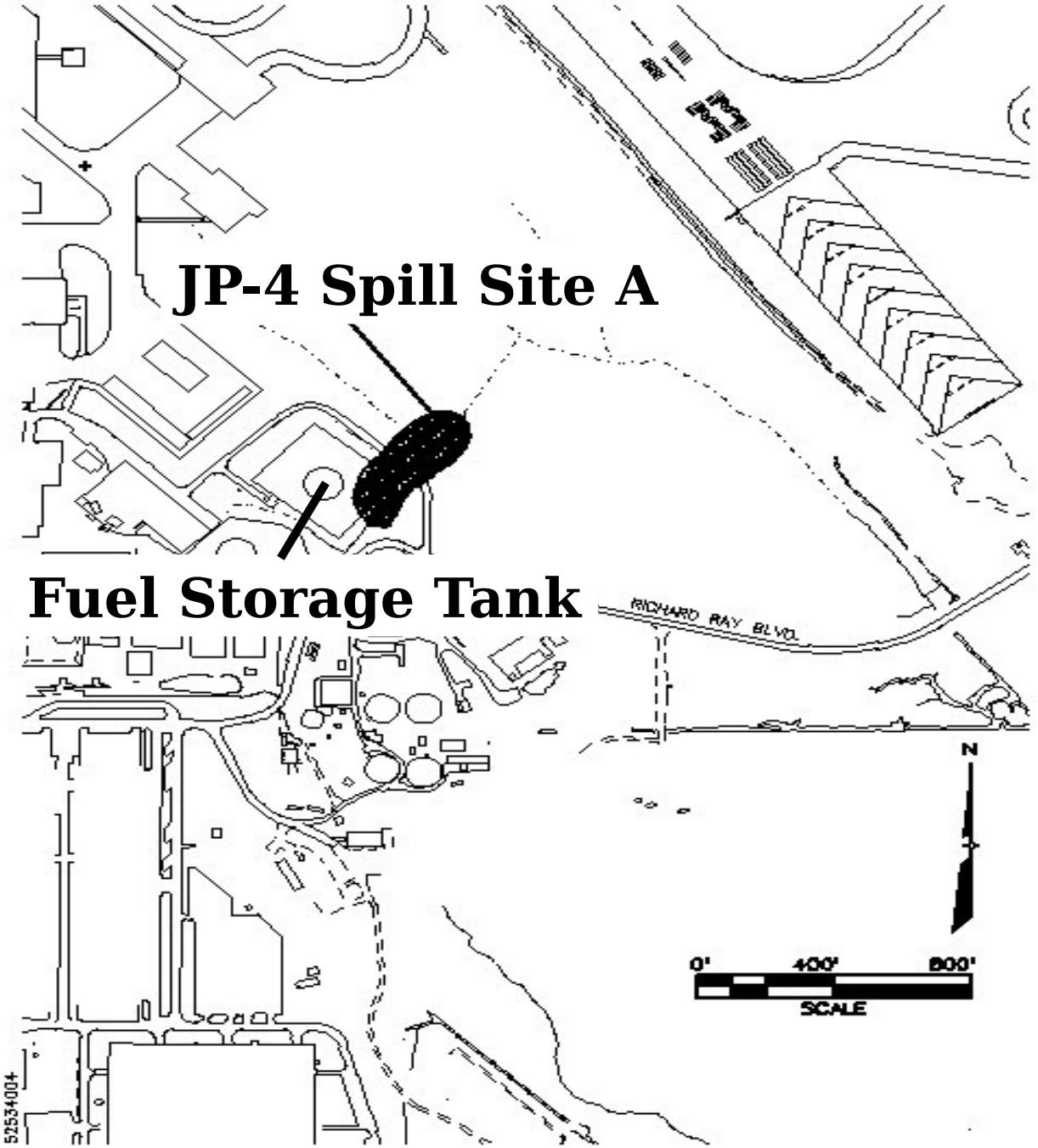
Site Closure

- CAP Completion Report submitted to GaEPD in February 2001
- GaEPD tentatively approved No Further Action for site pending modification to Hazardous Waste Facility permit
- Robins AFB has submitted documents to local library
- Public meeting

Remedial Action at JP-4 Spill Site

Mr. Phil Manning, WR-ALC/EMQ
and
Mr. Mark MacEwan, Earth Tech

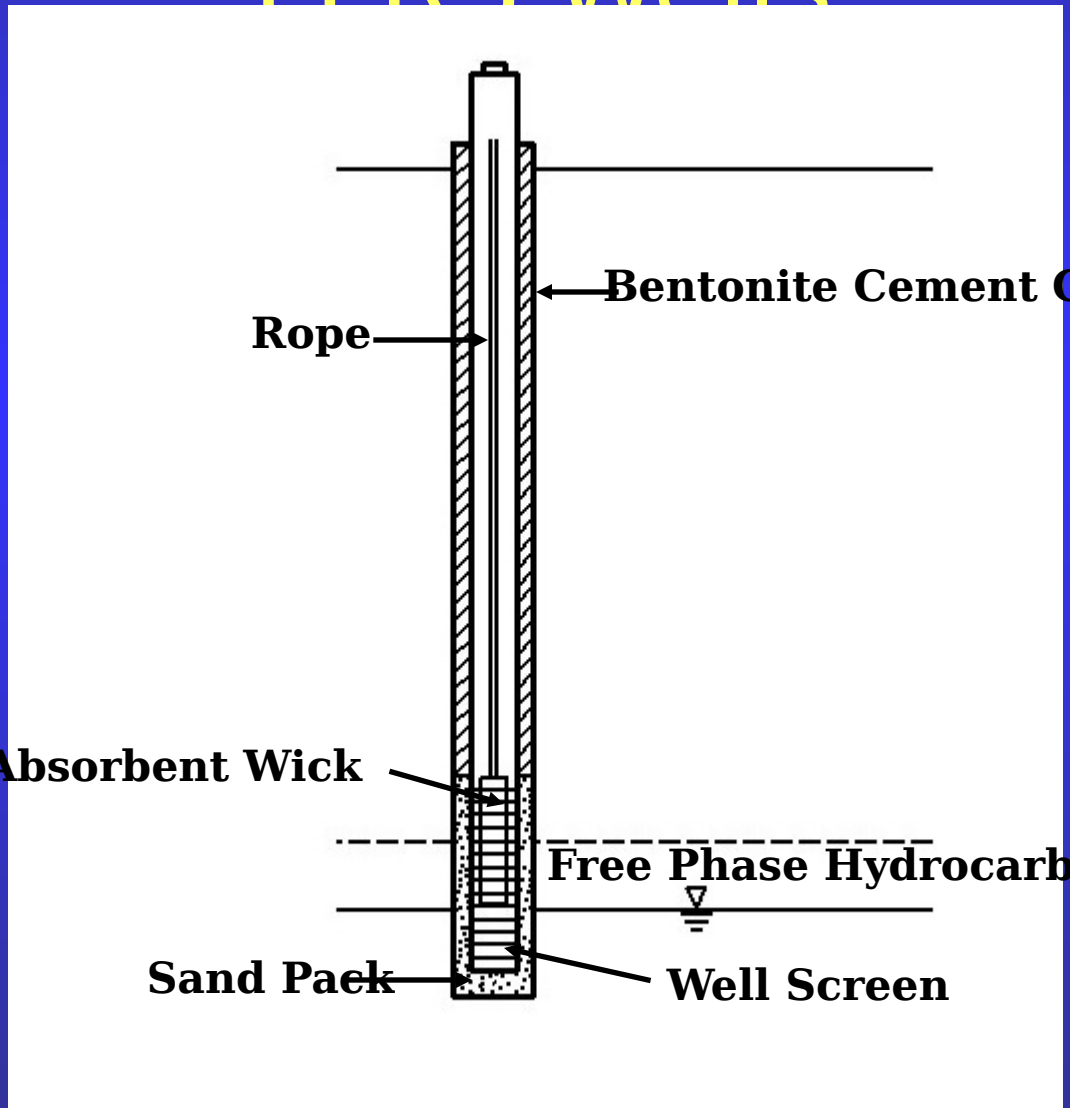
March 14, 2002


JP-4 Spill Site A
Fuel Storage Tank
RICHARD RAY BLVD.
N
0'
400'
800'
SCALE
52534004

Background

- Early 1970s- estimated 60,000 gallons of JP-4 fuel overflowed from a tank in the Fuel Storage Farm
  - Action: Small portion was recovered
- 1997- Corrective Action Plan
  - Remedial objective: 5 ppb of benzene
  - Free Product Recovery System (FPRS): Installed 1996 and operated 1996-1999
  - Bioventing system: Installed 1997 and operated 1997 to present

Cross-Sectional Schematic Diagram of FPBS Wells



A Successful Application of Innovative Remedial Technology

- Use of bioventing system to remediate JP-4 contaminated soil
- System circulates air to facilitate biodegradation of petroleum compounds

A Successful Application of Innovative Remedial Technology

- System consists of :
  - 2 blowers to deliver air
  - 12 injection wells
  - 6 pressure monitoring points
- System efficacy monitored by annual soil sampling and respiration testing
- Projected system life: 7 years

Bioventing System

Changes of Benzene Concentrations

- At the 3 foot depth: benzene reduced from 2500 ppb to non-detect
- At the 5 foot depth: benzene reduced from 8000 ppb to non-detect
- At the 7 foot depth: benzene reduced from 2500 ppb to non-detect

Monitoring of Remedial Progress

- 1997 – 2001: soil samples collected annually from four sample locations
- 2001: soil samples collected from 17 locations to confirm the completion of benzene remediation
  - **Benzene was not detected in any soil samples in 2001**
- 1998-2001: respiration testing conducted to verify biological activities
- Annual progress reports to GaEPD

Summary

- All free product recovered by FPRS in 1999
- Bioventing system successfully operated and eliminated benzene in JP-4 contaminated soil
- Site remedial objective of 5 ppb benzene achieved

Current Status

- Remedial progress has been reported to GaEPD
- Bioventing system continues in operation, pending regulatory response and direction

The Horse Pasture Site

Mr. Neil Davies

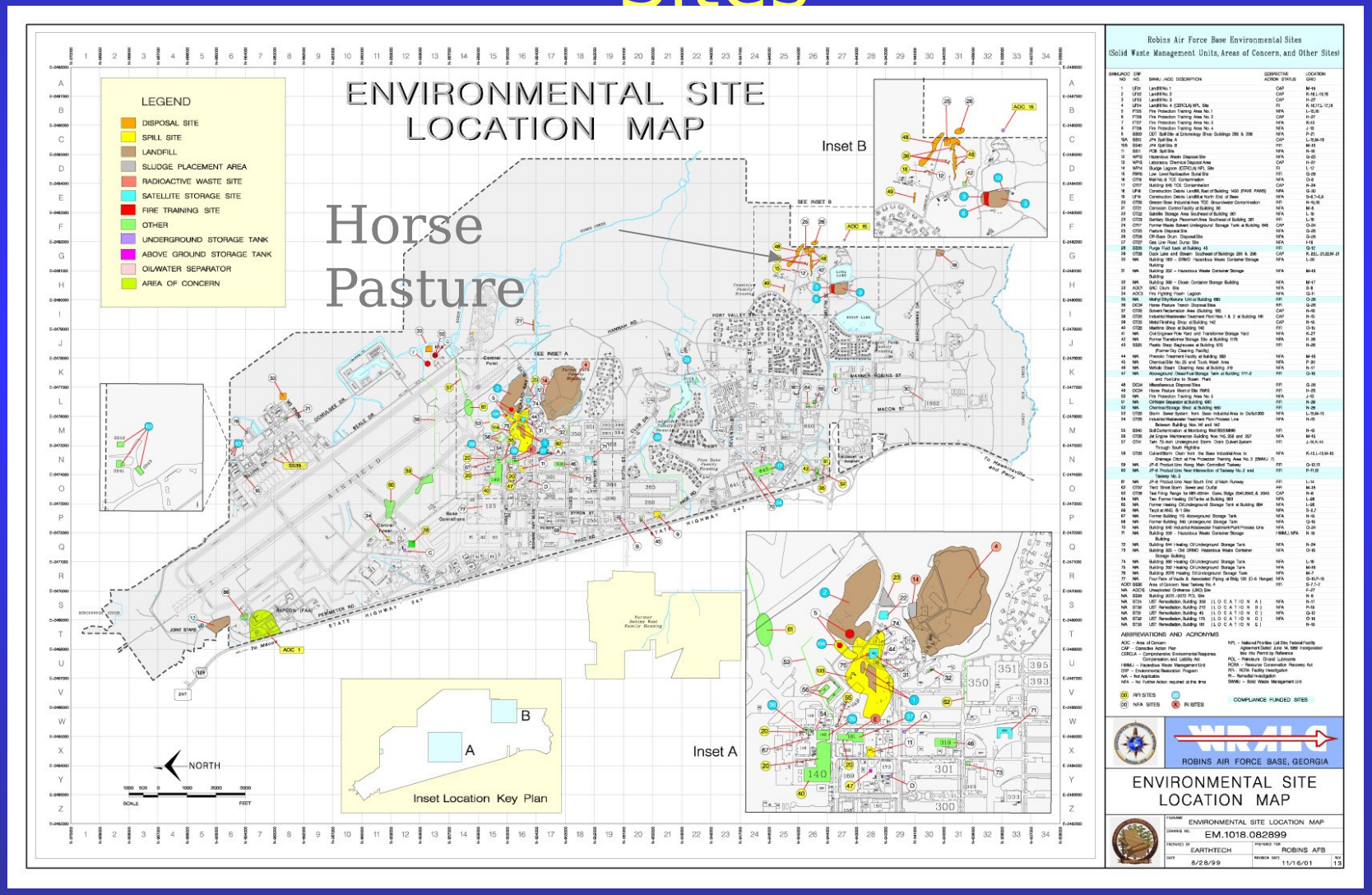
GeoSyntec Consultants

March 14, 2002

Agenda for Briefing

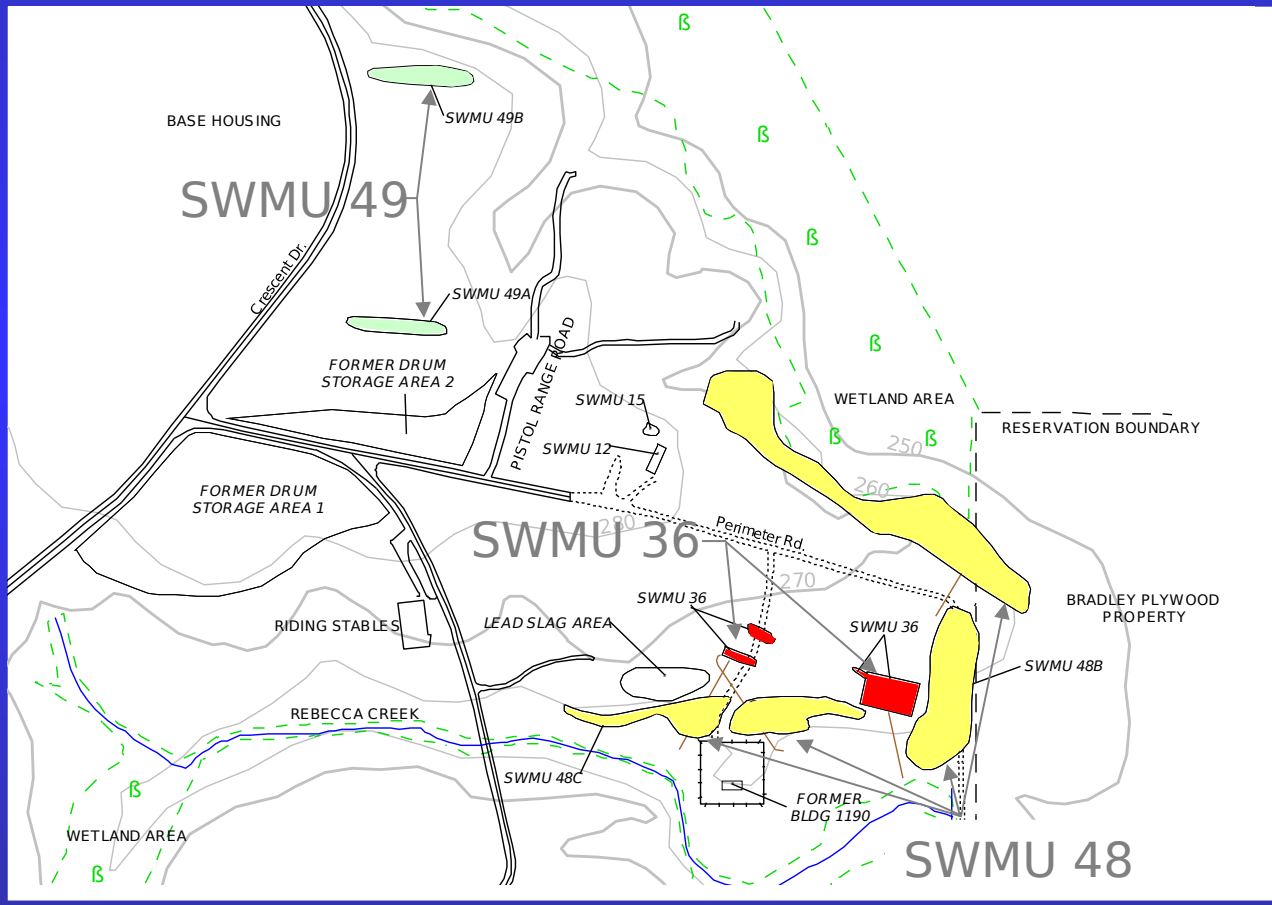
- History and Background
- Solid Waste Management Unit (SWMU) 36 - Activities and Findings
- SWMU 48 - Activities and Findings
- SWMU 49 - Activities and Findings
- Site-wide Groundwater - Activities and Findings
- Summary

Overview of Robins Environmental Restoration Sites



The Horse Pasture Site

- Three SWMUs
- SWMU 36 - Trench Disposal Area
- SWMU 48 - Miscellaneous Disposal Area
- SWMU 49 - Site west of RW-15
- Other areas



What's Known about the Horse Pasture Site

- Located at southeastern part of the base
- Historically site used as storage and disposal area from mid-1950s until early 1970s
- Site consists of several SWMUs and site – wide groundwater

What's Known about the Horse Pasture Site – Cont'd

- Site includes two fenced horse pastures and a former firing range
- Currently site used by RAFB for recreational horseback riding and grazing of horses

Investigations Conducted

- Phase I RFI, June 2000 – submitted to GaEPD for review
- GaEPD Review, November 2000 – indicated need for added site characterization and contaminant delineation
- Phase II RFI, November 2001 – initiated activities
- Phase II RFI, mid-2002 anticipated completion – currently being performed

SWMU 36 Activities

- Test pits – source investigation
- Core holes – vertical and horizontal delineation of contaminants
- Installed monitoring wells
- Groundwater monitoring

SWMU 36 Findings

- Several feet of soil fill material covers SWMU 36
- Three burn pits identified as possible source of contaminants
- Organics and metals detected

SWMU 48 Activities

- Test pits – source investigation
- Core holes – vertical and horizontal delineation of contaminants
- Installed monitoring well
- Groundwater monitoring

SWMU 48 Findings

- Consists of several feet of soil fill material containing miscellaneous debris
- Random hits of organics and metals detected
- Ash pile and tar-like material encountered

SWMU 49 Activities

- Test pits – source investigation
- Core holes – vertical and horizontal delineation of contaminants
- Groundwater monitoring

SWMU 49 Findings

- Confirmed location of firing range debris area
- Fill material consisted of clay and sand with some wood debris
- Random hits of organics and metals detected

Site-wide Groundwater Activities

- 46 existing groundwater monitoring wells
- 14 new groundwater monitoring wells
  - recently installed
- 6 multi-level monitoring wells
  - recently installed
  - innovative technology
  - to be briefed in this meeting

Site-wide Groundwater Findings

- Elevated concentrations of solvents detected in groundwater at numerous locations
- Contaminants include trichloroethene, vinyl chloride, dichlorobenzene
- Groundwater sampling currently being conducted; results available March/April 2002
- Site-specific conceptual model to predict direction and velocity of contaminant plume

Summary

- Phase II RFI, March/ April 2002 - field activities completed
- Phase II RFI, Summer 2002 - report preparation and submittal for GaEPD review
- Future steps - include Corrective Action Plan, Remedial Design and Remedial Action

Well Installation Technology Innovations

Mr. Charlie Spiers

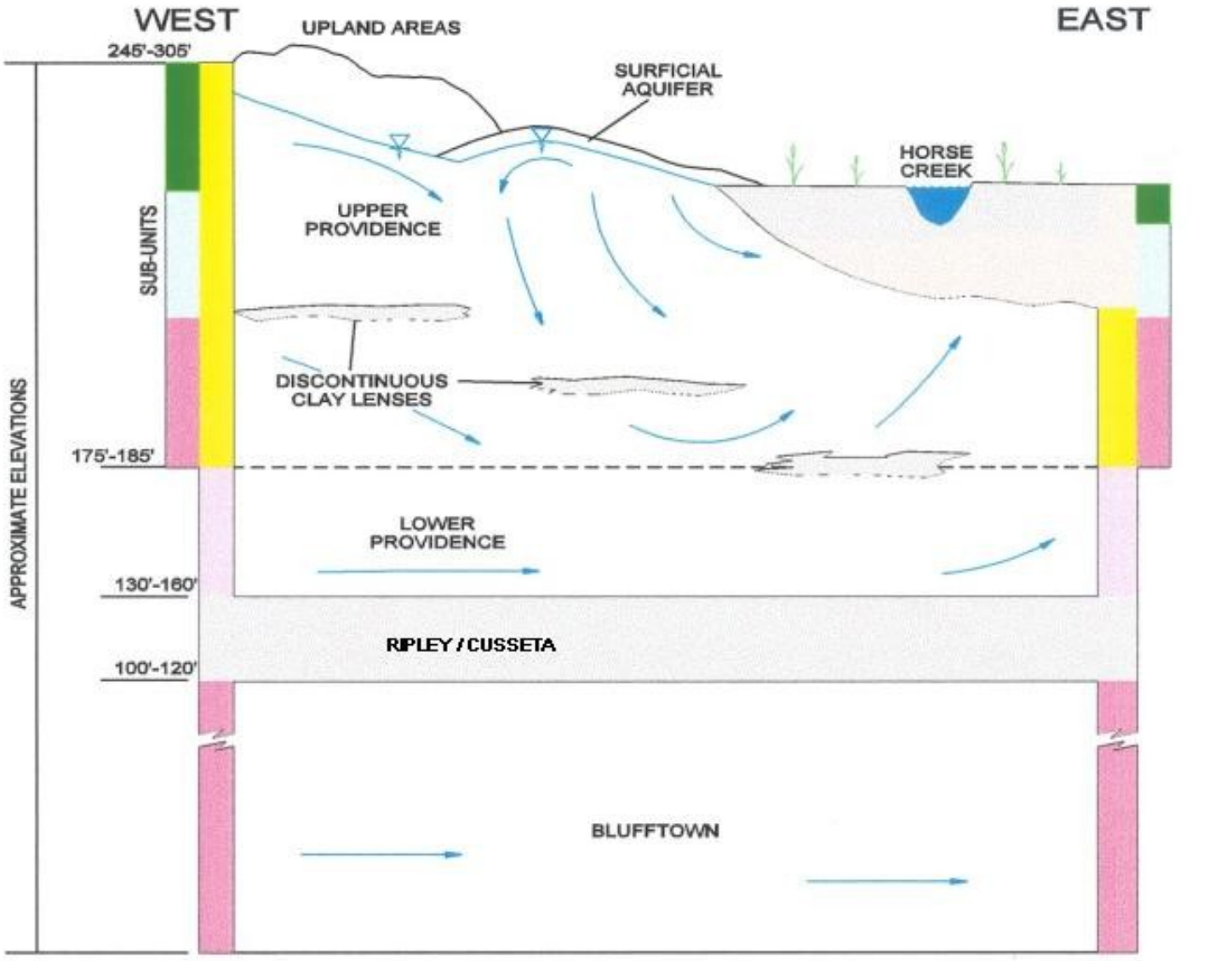
GeoSyntec Consultants

March 14, 2002

Steps to Getting Good Groundwater Data

- Exploratory (test) borehole
- Determine hydrogeology
- Well installation
- Well development
- Well sampling
- Groundwater sample analysis
- Data interpretation & management

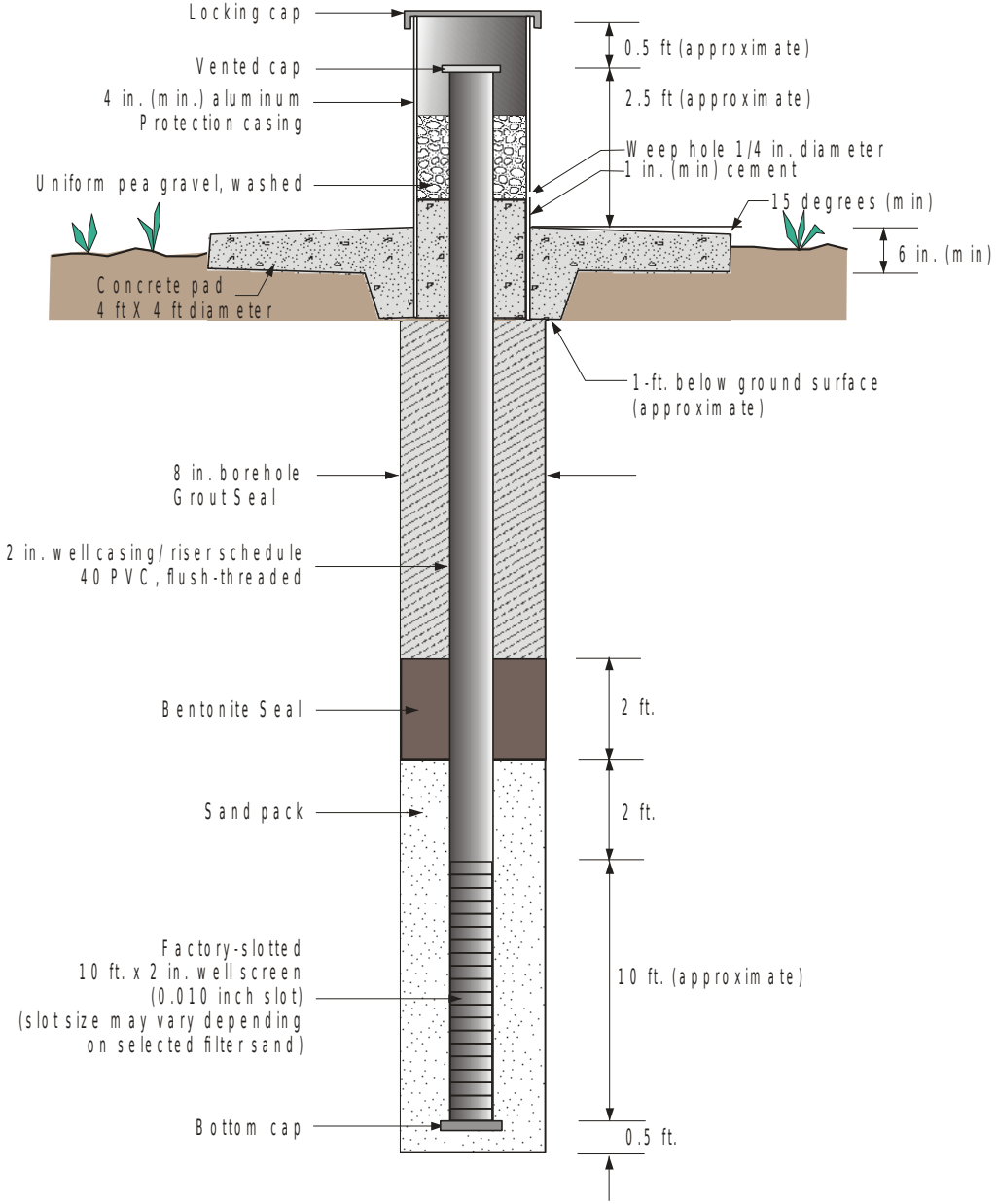
Overview of Robins Hydrogeology



Groundwater Monitoring Wells- The Fundamentals

- Conventional technology: hollow-stem auger or mud-rotary
- Improved technology: Rotosonic drilling (vibrating cutting head)
- Allows continuous core to be withdrawn to get accurate picture of geology

Groundwater Monitoring Well- Typical Construction

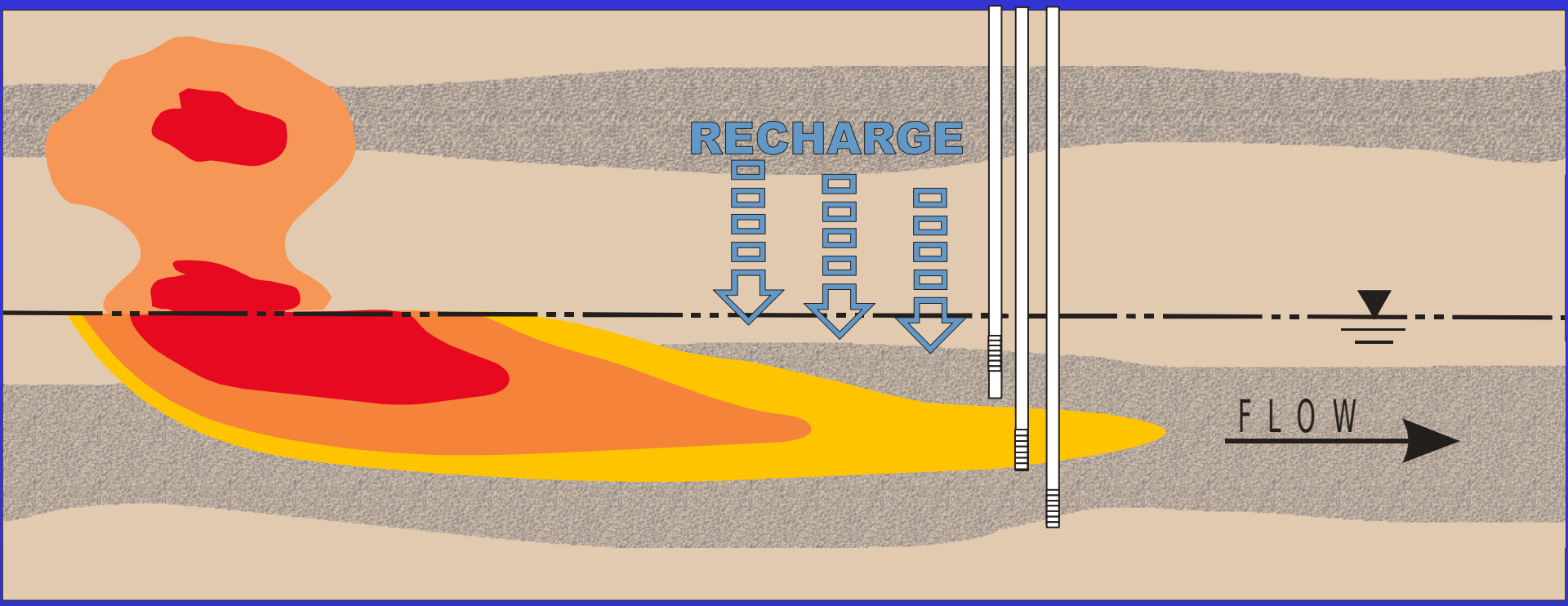

Locking cap
Vented cap
4 in. (min.) aluminum Protection casing
Uniform pea gravel, washed
Concrete pad 4 ft X 4 ft diameter
0.5 ft (approximate)
2.5 ft (approximate)
Weep hole 1/4 in. diameter
1 in. (min) cement
15 degrees (min)
6 in. (min)
1-ft. below ground surface (approximate)
8 in. borehole Grout Seal
2 in. well casing/riser schedule 40 PVC, flush-threaded
Bentonite Seal
Sand pack
Factory-slotted 10 ft. x 2 in. well screen (0.010 inch slot) (slot size may vary depending on selected filter sand)
Bottom cap
2 ft.
2 ft.
10 ft. (approximate)
0.5 ft.

Well Sampling– June 2001 RAB

Limitations of Conventional Monitoring Wells

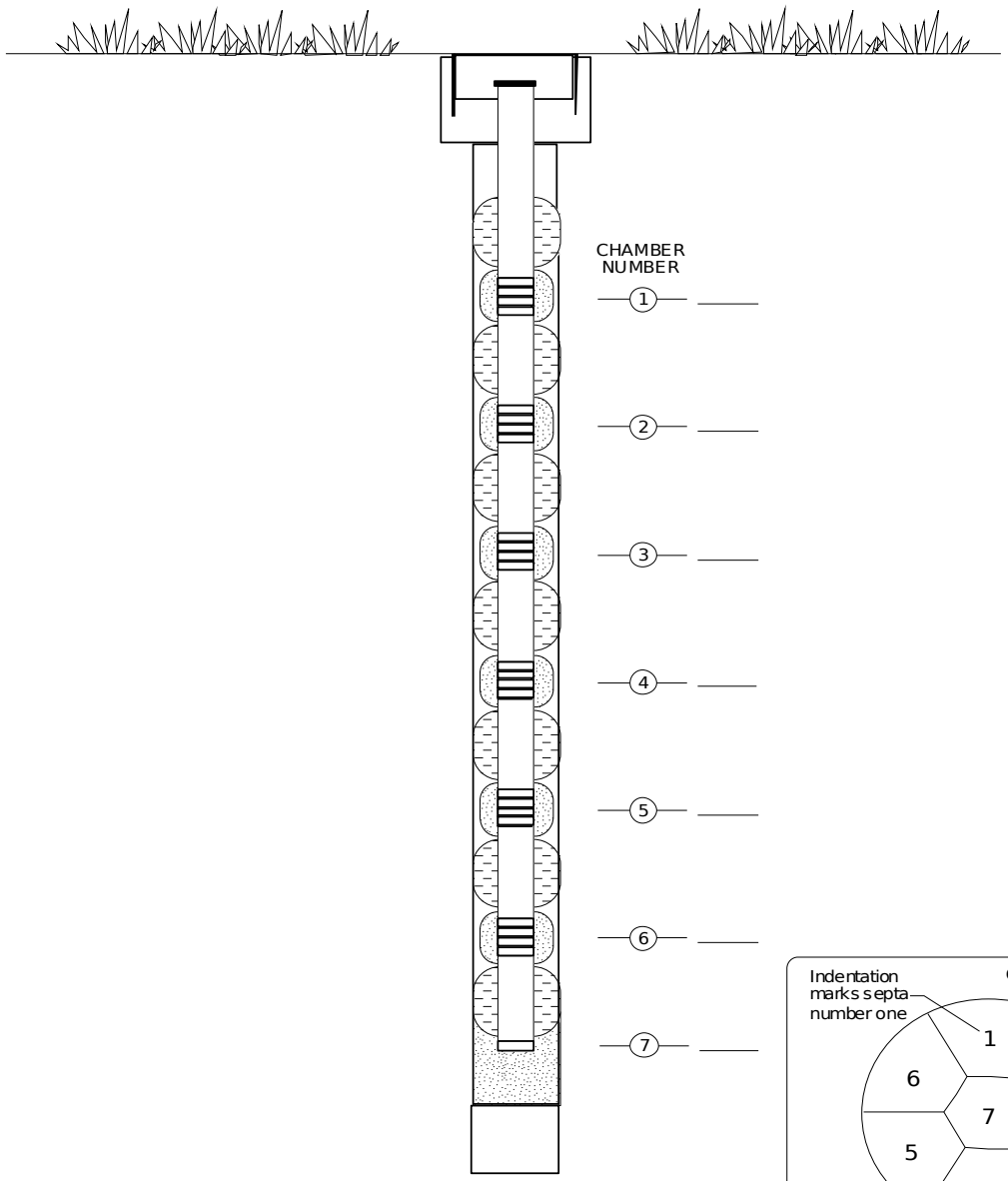
- Monitors one aquifer zone only
- To monitor multiple zones, as at Robins, requires multiple wells at one location
- Each well costs on average $50 - $60 per foot drilled

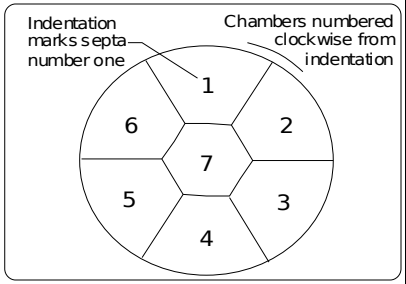
Conventional Method of Monitoring Multiple Zones



Newly Developed Innovative Well Technology: Multi-Level Wells

MULTI-LEVEL WELL CONSTRUCTION DIAGRAM





Selecting Screen Zones

Screen Construction

Multi-Level Wells: Installation

Multi-Level Wells: Advantages

- One multi-level well can replace up to seven individual wells
- Less site disturbance (one borehole instead of several)
- Less site time required
- Can sample from narrow discrete zones (typically 1 foot versus a 10-foot zone for conventional well)
- Can use these wells to determine direction of vertical flow
- Lower cost – about 1/4 the cost of drilling seven individual wells

Applications at Robins AFB

- Six multi-level wells already installed in Horse Pasture
- Successful installations - no problems
- These wells have been developed and sampled
- Currently well sample data is being used to assess vertical extent of contamination

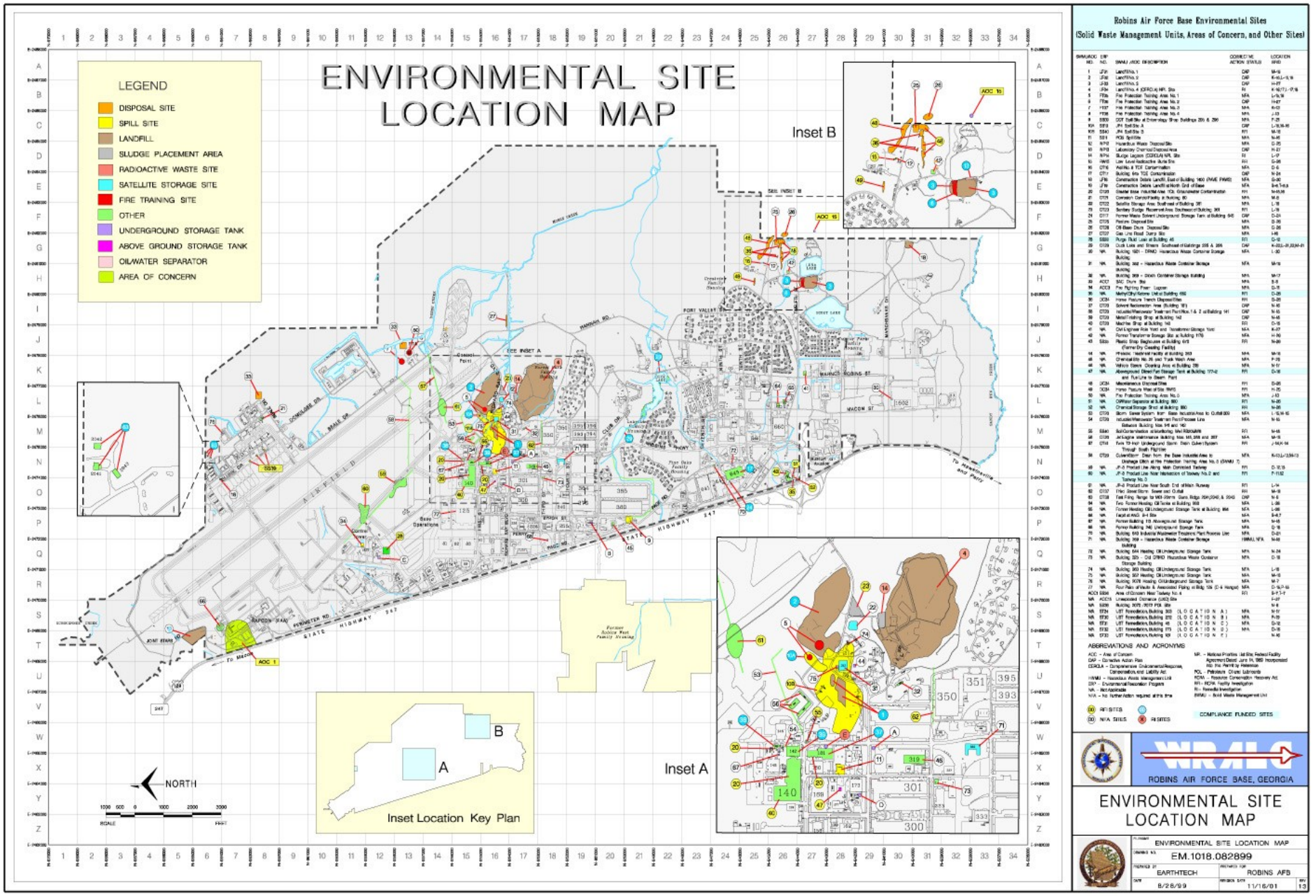
Summary

- Improved drilling technology (Rotosonic)
- New multi-port tubing technology (1-2 years old)
- Shorter time required with less site disturbance
- Better groundwater data
- Significant cost savings – nearly 75%

Environmental Restoration Program (ERP) Update

Mr. Kevin Long, WR-ALC/EMQ

March 14, 2002



Robins Air Force Base Environmental Sites

(Solid Waste Management Units, Areas of Concern, and Other Sites)

SWMU/AOC NO.	DRP NO.	SWMU /AOC DESCRIPTION	CORRECTIVE ACTION STATUS	LOCATION GRID
1	JF01	Landfill No.1	DRP	M-16
2	JF02	Landfill No.2	DRP	K-16,L-15,16
3	JF03	Landfill No.3	DRP	H-27
4	JF04	Landfill No.4 (CERCLA) NPL Site	RI	K-16(71)-17,16
5	FT05	Fire Protection Training Area No.1	NFA	L-15,16
6	FT06	Fire Protection Training Area No.2	DRP	H-27
7	FT07	Fire Protection Training Area No.3	NFA	K-13
8	FT08	Fire Protection Training Area No.4	NFA	J-23
9	SS00	SOT Spill Site at Entomology Shop Buildings 205 & 206	NFA	P-25
10	SS10	JP4 Spill Site A	DRP	L-15,16-16
11	SS40	JP4 Spill Site B	RFI	M-15
12	SS51	POL Spill Site	NFA	M-16
13	NP01	Hazardous Waste Disposal Site	NFA	O-25
14	NP02	Laboratory Chemical Disposal Area	DRP	H-27
15	NP04	Sludge Lagoon (CERCLA NPL Site	RI	L-17
16	HW05	Low Level Radioactive Burial Site	RFI	G-26
17	OT10	Asphalt & TCE Contamination	NFA	G-6
18	OT11	Building 949 TCE Contamination	DRP	M-24
19	LF06	Construction Debris Landfill, East of Building 1400 (FAVE PAVE)	NFA	G-30
20	LF07	Construction Debris Landfill at North End of Base	NFA	See Text
21	OT20	Disaster Area Industrial Area TCE Groundwater Contamination	RFI	M-15,16
22	OT21	Corrosion Control Facility at Building 80	NFA	M-18
23	OT22	Satellite Storage Area, Southeast of Building 281	NFA	L-18
24	OT23	Sanitary Sludge Placement Area Southeast of Building 300	RFI	L-16
25	OT17	Former Waste Solvent Underground Storage Tank at Building 640	DRP	D-24
26	OT25	Pesticide Disposal Site	NFA	H-26
27	OT26	Oil-Base Drum Disposal Site	NFA	G-26
28	OT27	Gas Line Road Dump Site	NFA	I-26
29	SS69	Purge Fluid Leak at Building 45	RFI	D-18
30	OT29	Duck Locks and Streams Southeast of Buildings 205 & 206	DRP	K-22(L-2),23,24-21
31	NA	Building 1921 - DRMO Hazardous Waste Container Storage Building	NFA	I-30
32	NA	Building 302 - Hazardous Waste Container Storage Building	NFA	M-19
33	NA	Building 309 - Drum Container Storage Building	NFA	M-17
34	ACC1	SAC Drum Site	NFA	E-8
35	ACC3	Fire Fighting Pond - Lagoon	NFA	D-19
36	NA	Methyl Ethyl Ketone Unit at Building 692	RFI	D-26
37	OT28	Inside Pressure Trench Disposal Sites	RFI	D-26
38	OT29	Solvent Reclamation Area (Building 181)	DRP	M-16
39	OT29	Industrial Wastewater Treatment Plant Nos. 1 & 2 at Building 141	DRP	M-16
40	OT29	Metal Finishing Shop at Building 140	DRP	M-16
41	OT29	Machine Shop at Building 140	RFI	D-19
42	NA	Civil Engineer Shop Yard and Transformer Storage Yard	NFA	K-27
43	NA	Former Transformer Storage Site at Building 1170	NFA	H-19
44	SS06	Plastic Shop Baghouses at Building 615 (Former Dry Cleaning Facility)	RFI	M-09
45	NA	Hydraulic Testbed Facility at Building 309	NFA	M-19
46	NA	Chemical Mix Bldg and Truck Wash Area	NFA	P-29
47	NA	Vehicle Steam Cleaning Area at Building 256	NFA	M-17
48	NA	Aboveground Diesel Fuel Storage Tank at Building 1774-2 and Fuel Line to Steam Plant	RFI	D-18
49	OT30	Miscellaneous Disposal Sites	RFI	D-26
50	OT31	Inside Pressure Trench (IPT)	RFI	F-25
51	NA	Fire Protection Training Area No.5	NFA	J-10
52	NA	Oil/Water Separator at Building 990	RFI	M-26
53	NA	Chemical Storage Shed at Building 990	RFI	M-26
54	OT29	Storm Sewer System from Base Industrial Area to Outfall 009	NFA	L-16,M-16
55	SS60	Industrial Wastewater Treatment Plant Process Line Between Building Nos. 141 and 140	NFA	M-16
56	SS60	Soil Contamination at Building 990 REMOVED	RFI	M-16
57	OT32	Jet Engine Maintenance Building Nos. 945, 946 and 947	NFA	M-18
58	OT34	Twin 72-Inch Underground Storm Drain Culvert System Through South Flightline	RFI	J-14,K-14
59	OT39	Culvert from the Base Industrial Area to Drainage Ditch at the Protective Training Area No.3 (SWMU 7)	NFA	K-10,L-13,14-13
60	NA	JP-8 Product Line along Connected Taxiway	RFI	D-10,11
60	NA	JP-8 Product Line Near Intersection of Taxiway No.2 and Taxiway No.3	RFI	F-11,12
61	NA	JP-8 Product Line Near South End of Main Runway	RFI	L-14
62	OT37	Misc. Street Storm Sewers and Outfall	RFI	M-18
63	OT38	Test Firing Range for M60 45mm Guns Bldgs 3541,3540, & 3545	NFA	M-8
64	NA	Two Former Heating Oil Tanks at Building 908	NFA	L-26
65	NA	Former Heating Oil Underground Storage Tank at Building 966	NFA	L-26
66	NA	Test pit at AOC 3 and Site	NFA	E-8,7
67	NA	Former Building 115 Aboveground Storage Tank	NFA	M-15
68	NA	Former Building 740 Underground Storage Tank	NFA	O-18
70	NA	Building 1400 Vehicle Washrack Treatment Plant Process Line	NFA	D-30
71	NA	Building 309 - Hazardous Waste Container Storage Building	HWMU/NFA	M-18
72	NA	Building 644 Heating Oil Underground Storage Tank	NFA	N-24
73	NA	Building 309 - Old DRMO Hazardous Waste Container Storage Building	NFA	O-18
74	NA	Building 360 Heating Oil Underground Storage Tank	NFA	L-18
75	NA	Building 307 Heating Oil Underground Storage Tank	NFA	M-18
76	NA	Building 3078 Heating Oil Underground Storage Tank	NFA	M-7
77	NA	Roof Drain of Vaults & Associated Piping at Bldg 10s (C-5 Hangar)	NFA	D-16,17-16
ACC5	SS64	Area of Concern West of Building No. 4	RFI	E-7,7-7
NA	ACC5	Unexploded Ordnance (UXO) Site	NFA	F-27
NA	SS09	Building 3075 /3078 POL Site	NFA	N-8
NA	ST01	UST Remediation, Building 300 (LOCATION A)	NFA	M-17
NA	ST02	UST Remediation, Building 270 (LOCATION B)	NFA	P-19
NA	ST31	UST Remediation, Building 270 (LOCATION C)	NFA	O-22
NA	ST32	UST Remediation, Building 173 (LOCATION D)	NFA	D-18
NA	ST33	UST Remediation, Building 109 (LOCATION E)	NFA	M-16

ABBREVIATIONS AND ACRONYMS

ACC - Area of Concern
DAP - Corrective Action Plan
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
HWMU - Hazardous Waste Management Unit
ERP - Environmental Restoration Program
NA - Not Applicable
NFA - No further action required at this time
NPL - National Priorities List Site; Federal Facility Agreement Dated June 14, 1990 Incorporated into the Permit by Reference
POL - Petroleum, Oil and Lubricants
RCRA - Resource Conservation Recovery Act
RFI - RCRA Facility Investigation
RI - Remedial Investigation
SWMU - Solid Waste Management Unit

(00) RFI SITES
(00) NFA SITES
(X) RI SITES

COMPLIANCE FUNDED SITES

WRALC
ROBINS AIR FORCE BASE, GEORGIA

ENVIRONMENTAL SITE LOCATION MAP

ENVIRONMENTAL SITE LOCATION MAP	
DRAWING NO.	EM.1018.082899
PREPARED BY: EARTHTECH	PREPARED FOR: ROBINS AFB
DATE: 8/28/99	REVISION DATE: 11/16/01
	REV: 13

New Business and Program Closing

Mr. Steven Coyle
Installation Co-Chair

Next RAB Meeting:

13 June 2002

Please recycle…

Recycle your name tag and lanyard by leaving them at your seat… we will collect and reuse at the next RAB meeting.

Thank you!